Met Office

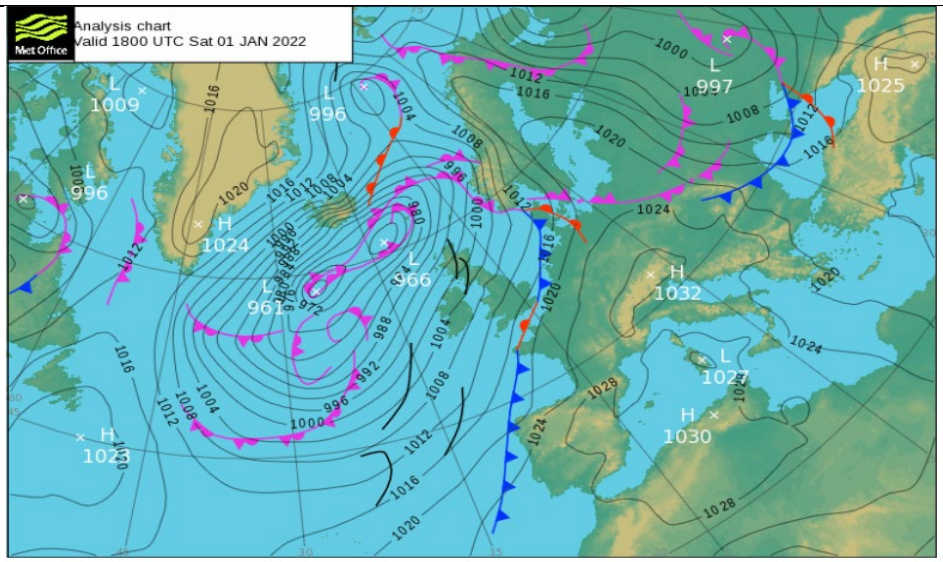
Summary: Chivenor (Devon) UK & England January Highest Daily min

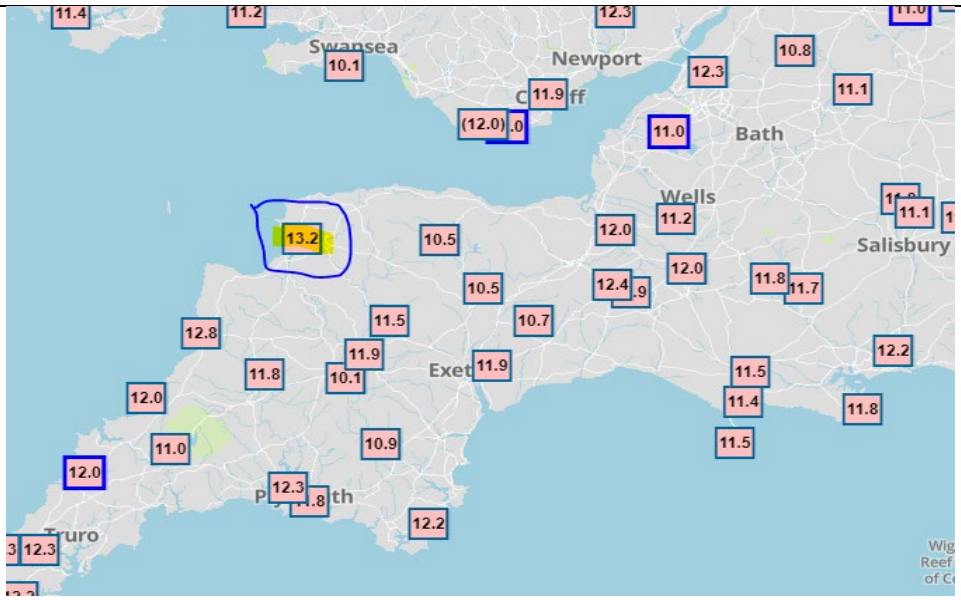
Occurrence: On the 1st January 2022 a daily minimum temperature of 13.2C was recorded at Chivenor (Devon)

Verified: 1/2/22 – complete.

GDPR sensitive information. No personal information to be contained within this document

Note: Each event will no doubt be unique, a structure is provided below for ensuring conformance of process and to aid the collection of relevant information. Reference to the RNM ISO process is expected. Additional information will no doubt also be required.

Is the 'occurrence/record' feasible given the general synoptic situation?	 A very mild SW airflow originating in the Azores dominated southern areas of the UK during the end of December and beginning of January. This resulted in very mild daily max temps and high daily min temperatures making this occurrence credible.

<table>
<tr><td colspan="2">In this synoptic situation is the station concerned one feasible for the ‘occurrence/record’?</td><td> 

The value is judged acceptable in the mild SW airstream. The station at Bude approximately 20 nautical miles SW and upwind from Chivenor reported a maximum of 12.8C. Given the synoptic situation, an element of Fohn effect may be contributing to the 13.2C.</td></tr>
<tr><td rowspan="2">Quality Management</td><td>Previous scores & comments</td><td>No previous issues with data from this automatic site.</td></tr>
<tr><td>Current comments</td><td>Value fits with all background QC checks.</td></tr>
<tr><td colspan="2">Evidence of occurrence/record.</td><td>Graph contained in Annex below.</td></tr>
<tr><td colspan="2">Statement on the risk of interference RNM</td><td>Access to the screen is restricted, requiring a key for the padlock, interference is not considered a risk.</td></tr>
<tr><td rowspan="4">Instrument RNM</td><td>Approved Type</td><td>Last Field Service Engineer (FSE) visit was on 11th November 2021. The full set of results are listed shown below. The DB1 sensor was SM000875. This is the correct sensor type and in the correct location in the screen.</td></tr>
<tr><td>Asset ID / Applicable co-efficients</td><td>The operational sensor was SM000875 and a copy of the certificate of calibration is copied below. The deployed asset within the operational system conflicted (SM0015072), the applicable corrections from coefficients have been removed and the appropriate applied. This also results in a rounded temperature of 13.2C.</td></tr>
<tr><td>Verification checks</td><td>Checks carried out by FSE on 11th November 2021 shown below, which were well within tolerance of an operational sensor:
<table>
<tr><td>DB</td><td></td><td>SM000875</td></tr>
<tr><td>Inspectors Standard</td><td>Cor</td><td>Sensor</td></tr>
<tr><td>13.2</td><td>0.0</td><td>13.27</td></tr>
<tr><td>13.21</td><td>0.0</td><td>13.27</td></tr>
<tr><td>13.19</td><td>0.0</td><td>13.27</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Diff</td><td>0.042</td><td></td></tr>
</table></td></tr>
<tr><td>Calibration period</td><td>SM000875 Last calibrated on 30/09/2021 and not due for another calibration until 29/09/2029.</td></tr>
<tr><td>Physical condition</td><td>No issues identified.</td></tr>
</table>

Instrument Installation		RNM not able to access the screen on 30th November 2021, but FSE carried out on 11th November 2021. No issues have been raised with this screen or sensor in recent years. Screen installed correctly. It is in sound order, at the correct height, over grass and facing north. Check sensor (DB2) position is noted as differing from Primary (DB1) and is planned to be relocated in future as part of an open network action. No detrimental effect on the readings on DB1 expected. The screen was recorded in good working order, clean, at the correct height and facing north.
Instrument Exposure RNM	Exposure – CIMO rating	Current CIMO grading of 4 Site exposure assessment (copied below) shows a very good exposure to the sun. An old runway to the south and an ATC/OPS building to the north. Both are within 30m hence the WMO Commission for Instruments and Methods of Observation (CIMO) 4 grading.
Instrument Exposure RNM	Exposure – Met Office Grading	Current Met Office grading is good. The proximity of heat sources restricts this site from achieving the higher grades in both the Met Office and CIMO schemes.
	Unnatural surface areas %	3 m: 11% 10 m: 9% 30 m: 16% 100 m: 55% 100m-3 km: 20%
	Exposure - comments	The equipment and sensors here are not an issue and raise no doubts. The exposure to the sun is very good. As noted, some areas or unnatural surface, but amounts and distance are within the acceptable limits.
Observer Competence		N/A
Last Inspection comments RNM		The last inspection detailed as above. Screen and sensors in good order. There are no shading concerns, the only issue raising the CIMO grading are unnatural surfaces.
Confirmation that the output data / graphs are credible / consistent.		Data provided is credible, with no further comments.
Other Comments / and Outcome.		N/A

Conclusion:

The extreme is to be accepted.

Other Supporting Information

Contents:

1. **MMS trace (DB1 in blue DB2 in green)**

Met Office
Trend Vi
Load Config
Save Config
Save As
Print
Add Trend
Settings
Help
About
05-Jan-2022 14:49:50
05-Jan-2022 15:49:50
31-Dec-2021 08:50:00
01-Jan-2022 08:50:00
Trend Server Stream Works Process Function Asset Tag Name Address Data Type Intersect ... Intersect Max Min Mean Style Time Axis Value Axis Displayed Markers Values Limits Sampling
mms_arh2 MMS2.E_VALUE Chivenor DB SM015072 DB_1m CHIVENOR ... E19571 Raw Data 15.1574 13.2104 No Yes Yes Left false false false Simple 1
mms_arh2 MMS2.E_VALUE Chivenor DB2 SM069790 DB2_1m CHIVENOR ... E19572 Raw Data 15.0792 13.1067 No Yes Yes Left false false false Simple 1

2. **Minute data values. Value was recorded at 18:04hrs on the 31st Dec 2021. The period for the Daily minimum for the 1st January 2022 is 0900z on 31/12/2021-09z 01/01/2022.**

31-Dec-2021 17:46:00	13.4732	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 17:47:00	13.4757	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 17:48:00	13.4895	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 17:49:00	13.4847	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 17:50:00	13.4942	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 17:51:00	13.4879	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 17:52:00	13.4526	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 17:53:00	13.4197	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 17:54:00	13.4021	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 17:55:00	13.363	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 17:56:00	13.3762	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 17:57:00	13.3185	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 17:58:00	13.293	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 17:59:00	13.3378	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 18:00:00	13.299	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 18:01:00	13.2863	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 18:02:00	13.3194	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 18:03:00	13.2701	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 18:04:00	13.2104	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 18:05:00	13.2206	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 18:06:00	13.3106	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 18:07:00	13.3525	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 18:08:00	13.3897	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 18:09:00	13.4219	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 18:10:00	13.46	CHIVENOR DB 1M Outstation	No Alarm	0	1	No
31-Dec-2021 18:11:00	13.4524	CHIVENOR DB 1M Outstation	No Alarm	0	1	No

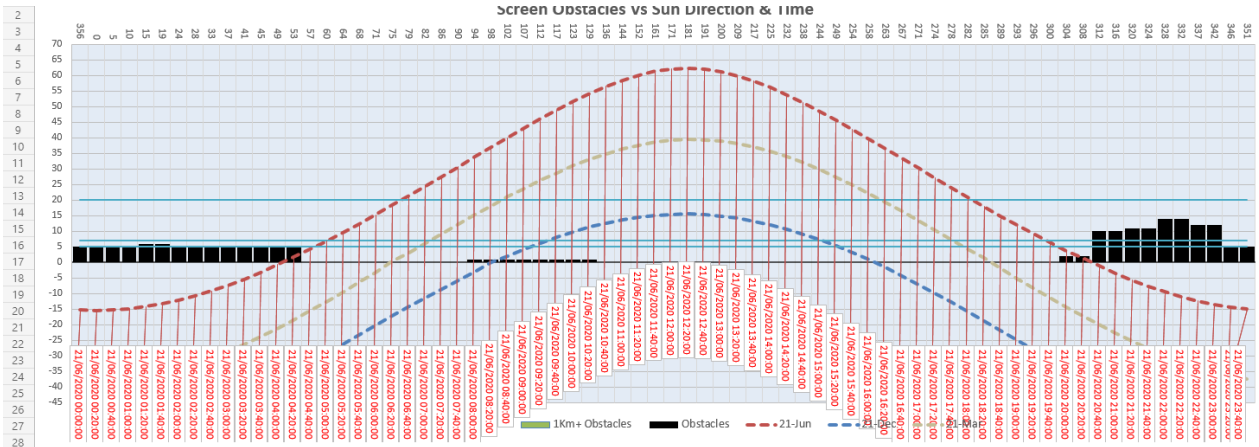
3: **Site photos. (30/11/2021)**

Facing North

Facing South

Facing West

4: Site exposure assessment. (30/11/2021)



	Average	J	F	M	A	M	J	J	A	S	O	N	D	Equinox
Average Sun (%) through the month (CIMO)	98.52	98.57	100.00	100.00	99.61	96.56	94.29	95.89	98.63	100.00	100.00	99.58	99.05	100.00
Average Sun (%) through the month (all obstacles)	98.45	100.00	100.00	99.27	96.80	97.22	96.22	96.98	96.98	97.97	100.00	100.00	100.00	100.00

5: Sensor certificate of calibration

Quality Assurance Laboratory
Met Office FitzRoy Road Exeter EX1 3PB United Kingdom
Tel: +44(0)1392 885501 Fax: +44(0)1392 885853

Met Office

Certificate of Calibration for an Electrical Resistance Thermometer

Met Ref: 21810 **Type:** ERT, Mk4A
Serial No: 86604/47 **Asset No:** SM000875
Cert. No: TE289/21 **Calibrated by:** SW
Date of Test: 30/09/2021
Cal. Due: 29/09/2029

True Temp. (°C)	Resistance (Ω)
-30	88.279
-20	92.205
0	100.030
+30	111.695
+40	115.563

For the Chief Executive, Met Office.

N.B. Please read the notes overleaf.

1. All standards and measuring equipment used for this calibration are traceable to the realisation of the units of measurement as made by the National Physical Laboratory.
2. The uncertainty of measurement of the test equipment used is calculated not to exceed ±0.02°C.
3. The reported uncertainty is an expanded uncertainty calculated using a coverage factor of k=2 which gives a level of confidence of approximately 95%.
4. The uncertainty quoted refers to the measured values only, with no account taken of the instrument's ability to maintain its calibration.
5. The instrument may be unreliable after the re-calibration expiry date.
6. **This card should remain with and accompany the instrument at all times.**

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6: Incorrect DB sensor allocated to Chivenor in MMS

During the process, it was identified that the operational Meteorological Monitoring System (MMS) asset was incorrect. SM015072 allocated as the DB1 sensor had subsequently been replaced with SM000875 on 11/11/21 (13:40). This led to the wrong co-efficients being used for the temperature calculations in the initial output. A recalculation of the operational temperature was carried out resulting in a rounded temperature of 13.2C.